



Joseph Pawlik, professor of marine biology, and his team of researchers are studying sponges, animals that are far more prominent than corals in modern reef systems in the Caribbean. Pawlik's team is focused on many aspects of sponge life in the reef including spread of a diseased called Sponge Orange-Band (SOB). SOB derives its name from the orange band that develops around a disease sponge and disintegrates the organism. The disease spreads even to the reefs' oldest sponges, felling sponges that have lived as long as 2,300 years.

DEEP EXPERTISE

UNCW RESEARCHERS DELVE INTO THE CARIBBEAN

For the researchers from the **University of North Carolina Wilmington**, the Caribbean is no vacation. From studying ways to prevent the decline of the region's coral reefs to providing medicine to poor villagers to unearthing the history of vanished civilizations, the university's faculty, staff and students have spent decades expanding the world's understanding of the region and finding ways to improve the lives of its residents and the health of its ecosystem.

UNCW and its scholars have extensive experience in the region. Scholars like the Center for Marine Science's Alina Szmant – who became one of the first female aquanauts by spending almost a month underwater in the undersea habitat Tektite II off the coast of St. Johns in 1970 – have explored the waters of the region for decades. UNCW's first formal exchange program was with the Universidad Nacional in Heredia Costa Rica in 1989. Since the university first began working in the Caribbean, hundreds of undergraduates – like the archaeology students excavating the ruins of Mayan civilizations in Belize – have received their first hands-on field research experience there.

Located less than three hours of flight time from North Carolina, the Caribbean offers UNCW a unique living laboratory for researchers and students. The Caribbean Sea encompasses more than 7,000 islands and 30 nations or territories – including the Central American nations with coastlines on the sea – providing a unique living laboratory for UNCW. More than 8 percent of the world's coral reefs lie beneath its waters and it is home

to more than 70 species of coral and more than 700 species of reef fishes. The inland ecosystems range from rain forest jungles to arid deserts and offer an astounding biodiversity, earning it a designation as one of Conservation International's biodiversity hotspots. The peoples of the region speak English, French, Spanish, Dutch and a variety of creole languages such as Haitian and Papiamento.

The university currently has active research underway in more than 24 nations in the region. This map explores many of the projects currently underway. Professors and students from disciplines as diverse as film studies to geology and geography have traveled to the region to research the islands and neighboring Central American nations, their inhabitants and the ecology of the land and surrounding oceans. Data collected by UNCW's researchers are helping map earthquake zones, determine the effects of climate change on native species and track the history of native peoples.

Together with partners like NOAA, the Woods Hole Oceanographic Institute and the Florida Keys National Marine Sanctuary, the university's leadership in Caribbean research played a role in building UNCW's national reputation, especially part of its world-leading marine biology program. Projects like the Aquarius underwater habitat — which the university has operated since the 1980s — the university's commitment to the region will ensure that scholars will continue to enrich the world's understanding of the diverse inhabitants of the region.

ANGUILLA

Mineralogical and petrological variations of prehistoric ceramic shards.

Michael Smith, Geography and Geology http://people.uncw.edu/smithms

BAHAMAS

Meteorological observation network connecting climate data to geological processes, microbiology of inland lakes, distribution of invasive tree species and island water resource development.

Dr. Doug Gamble, Geography and Geology http://people.uncw.edu/gambled

Assessing the chemical defenses of Caribbean sponges.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

BARBADOS

\$ **1** Economic value of coastal and marine resources.

Pete Schumann, Economics and Finance www.csb.uncw.edu/people/schuhmannp

BELIZE

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

Archaeology field school at Lamania and Marco Gonzalez, Ambergis Caye, Belize.

Scott Simmons, Anthropology http://people.uncw.edu/simmonss

 Belize Foundation for Research and Environmental Education.

James Rotenberg, Environmental Studies www.bfreebz.org/ https://sites.google.com/site/rotenbergj/home

Environmental Research Institute, University of Belize.

Martin Posey, Biology and Marine Biology Center for Marine Science www.eriub.org/ www.uncw.edu/bio/faculty_posey.htm

Environmental Research Institute, University of Belize.

Jack Hall, Environmental Studies http://people.uncw.edu/hallj/ www.eriub.org

Environmental legal issues of onshore and offshore petroleum exploration. Research into laws related to both

environmental protection and funding of environmental efforts through PACT and other entities. Internships in the environmental field, including scientific, management, sustainable business and tourism. Association with University of Belize, Belize Ministry of Tourism and Belize Environmental Research Institute.

Robert Cutting, Environmental Studies http://people.uncw.edu/cuttingr

Joint research program in the forest reserves of Belize. Association with Galen University, Belize.

Jeffrey Hill, Environmental Studies http://people.uncw.edu/hillj

Field course in the Preservation of Mayan art.

Vibeke Olsen, Art and Art History www.uncw.edu/art/about-olsen.html#du/ adharg/home.html

international Teaching Field Experience, San Pedro, Belize. UNCW education majors are placed in a five-week exchange with Belizean teachers, sharing teaching methods and theory.

Dennis Kubasko, Instructional Technology, Foundations and Secondary Education http://people.uncw.edu/kubaskod/international.html

International Teaching Field Experience, San Pedro, Belize. UNCW education majors are placed in a five-week exchange with Belizean teachers, sharing teaching methods and theory.

Susan Catapano, Educational Leadership http://people.uncw.edu/catapanos

International Teaching Field Experience, San Pedro, Belize, Shooting a documentary film on the Belize/UNCW teacher exchange.

William Bolduc, Communication Studies http://people.uncw.edu/bolducw

The role of water flow in structuring reef communities and how it affects coral bleaching and reef suspension feeders such as sponges, corals and fishes.

Christopher Finelli, Biology and Marine Biology http://people.uncw.edu/finellic

BONAIRE

♦ ★ Assessing the chemical defenses of Caribbean sponges.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

COLOMBIA

★ \$ ☐ Recovering and narrating the marginalized history of this Colombian archipelago through an examination of the Columbian novel, *No Give Up, Maan!* (2002), by Hazel Robinson Abrahams.

Christopher C. Dennis,

Foreign Languages and Literatures
www.uncw.edu/fil/UNCWCollegeofArtsScience
ForeignLanguagesLiteratures-FacultyDennisC.
html

COSTA RICA

Marketing principles immersion field experience in Costa Rica. Partnered with the Costa Rican Humanitarian Foundation.

Lisa Scribner, Marketing http://csbapp.csb.uncw.edu/data/fs/vita.aspx?id=8349

Research and instruction in music education for K-12 students and their teachers using the Orff-Schulwerk approach. Sponsored by the Universidad Nacional de Costa Rica, Universidad de Costa Rica, Foro Costarricense de Educación Musical and Colegio Metodista.

Daniel C. Johnson, Music www.uncw.edu/music/johnsond

Late-Holocene environmental change in Central America and the circum-Caribbean. Tracking prehistoric maize cultivation using stable isotope analyses of lake sediments, assessing the impacts of rapid climate change on prehistoric human populations and the impacts of global climate change.

Chad Lane, Geography and Geology http://people.uncw.edu/lanec

CUBA

↑ ≤ Soaring with Fidel. Following migratory ospreys in the Caribbean.

David Gessner, Creative Writing www.uncw.edu/writers/faculty_gessner.html

🕇 互 Cuban film and media.

Mariana Johnson, Film Studies http://www.uncw.edu/filmstudies/faculty/ johnson-mariana.html

★ Caribbean literature, Afro-Hispanic narrative and contemporary Hispanic literature written by women.

Emmanuel Harris II,

Foreign Languages and Literatures http://people.uncw.edu/harrise/index.htm

CURAÇÃO

¥1 a Ecology and geology of Caribbean coral reefs.

Alina Szmant, Biology and Marine Biology Center for Marine Science www.uncwcuracaoreefs.blogspot.com http://people.uncw.edu/szmanta

Y Ecology of Caribbean coral reefs.

Steve Ross, Center for Marine Science www.uncw.edu/cms/bio.rosss.htm

Ecology of Caribbean coral reefs.

Sandra Brooke, Center for Marine Science www.uncw.edu/cms

Assessing the chemical defenses of Caribbean sponges.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

DOMINICAN REPUBLIC

Late-Holocene environmental change in Central America and the circum-Caribbean. Tracking prehistoric maize cultivation using stable isotope analyses of lake sediments, assessing the impacts of rapid climate change on prehistoric human populations and the impacts of global climate change.

Chad Lane, Geography and Geology http://people.uncw.edu/lanec

HAITI

A Geographic Information Systems: watershed modeling, coastal land use development and the impacts on non-point source pollution modeling.

Joanne Halls, Geography and Geology http://people.uncw.edu/hallsj

JAMAICA

• Online course development partnership at Northern Caribbean University in Mandeville, Jamaica.

Joseph M. Kishton, Psychology

† 1 The historical roots and cultural traditions of Afro-Caribbean religions

Nathaniel Samuel Murrell,

Philosophy and Religion http://people.uncw.edu/murrells

The double exposure and vulnerability of farmers to globalization and climate change in southwestern Jamaica.

Doug Gamble, Geography and Geology http://people.uncw.edu/gambled

Regional information and communications technology.

Devon Simmonds, Computer Science http://people.uncw.edu/simmondsd

■ MARTINIQUE

Assessing the chemical defenses of Caribbean sponges.

Joe Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

■ MI=XICO

♦ ★ ★ Assessing the chemical defenses of Caribbean sponges.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

PANAMA

₩ ≦ Marine algal diversity of southern Central America: Research training through the development of a Panamanian marine flora.

D. Wilson Freshwater, Center for Marine Science





■ PUERTO RICO

Applications of undersea technologies to scientific research. Studies of mesophotic coral reef ecosystems.

Cooperative Institute for Ocean Exploration, Research and Technology www.cioert.org

A Mapping submarine faults to help constrain the seismogenic and tsunamogenic potential of the northeastern North American-Caribbean plate boundary.

Nancy Grindlay, Geography and Geology Center for Marine Science http://people.uncw.edu/grindlayn

↑ Linguistic variation in Spanishspeaking countries of the Caribbean.

Amanda R. Boomershine.

Foreign Languages and Literatures http://people.uncw.edu/boomershinea

Reproductive ecology and physiological ecology of reef corals and nutrient dynamics in tropical coastal systems.

Alina Szmant, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/szmanta

Management strategies adopted by NOAA and the Florida Keys National Marine Sanctuary trying to control populations of lionfish, an invasive species, through programs that encourage CATCH and EAT!

Jerome Naar, Center for Marine Science http://people.uncw.edu/naarj

★★ △ Assessing the chemical defenses of Caribbean sponges.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

▲ ≦ Sediment records of late-Holocene environmental change and prehistoric records of bioluminescence from coastal lagoons.

Chad Lane, Geography and Geology http://people.uncw.edu/lanec

■ SAINT LUCIA

Assessing the chemical defenses of Caribbean sponges.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj

■ SAINT EUSTATIUS

Assessing the chemical defenses of Caribbean sponges.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlik

TRINIDAD AND TOBAGO

*\$ £ Extractive and non-extractive value of marine turtles in Tobago.

Pete Schumann, Economics and Finance http://www.csb.uncw.edu/people/schuhmannp

UNITED STATES VIRGIN ISLANDS

Management strategies adopted by NOAA and the Florida Keys National Marine Sanctuary trying to control populations of lionfish, an invasive species, through programs that encourage CATCH and EAT!

Jerome Naar, Center for Marine Science http://people.uncw.edu/naarj

ST. CROIX

Marine Research and Education Center. Salt River Bay National Historical Park and Ecological Preserve, St. Croix, USVI.

http://www.nps.gov/sari/index.htm

Applications of undersea technologies to scientific research. Studies of mesophotic coral reef ecosystems.

Cooperative Institute for Ocean Exploration, Research and Technology http://www.cioert.org

Mineralogical and petrological variation analysis of prehistoric pottery.

Michael Smith, Geography and Geology http://people.uncw.edu/smithms

♣ Geographic Information Systems: watershed modeling, coastal land use development and the impacts on non-point source pollution modeling.

Joanne Halls, Geography and Geology http://people.uncw.edu/hallsj

★ ▲ The effects of seawater temperature on the physiology and behavior of sea turtles.

Amanda Southwood Williard,

Biology and Marine Biology http://people.uncw.edu/williarda

\$ 1 Economic, environmental and social impacts of tourism.

Nancy Hritz, Health and Applied Human Sciences http://www.uncw.edu/hahs/NHritz.htm

Past and present climate of the Salt River Bay watershed.

Doug Gamble, Geography and Geology http://people.uncw.edu/gambled

▲ ▲ Past and present climate of the Salt River Bay watershed. Modern and prehistoric bioluminescence in Salt River Bay.

Chad Lane, Geography and Geology http://people.uncw.edu/lanec

Individual and community level knowledge and preparation for tsunamis.

Jennifer Horan, Public and International Affairs http://people.uncw.edu/horanj

Individual and community level knowledge and preparation for tsunamis.

Stephen Meinhold, Public and International Affairs

http://people.uncw.edu/meinholds

Fifects of ocean currents on reef fish population dynamics. Behavioral interactions of reef fish.

Will White, Biology and Marine Biology http://people.uncw.edu/whitejw

Bob Wicklund, UNCW

Ron Moore, Center for Marine Science

ST. JOHN

₹ Mineralogical and petrological variations of prehistoric ceramic shards.

Michael Smith, Geography and Geology http://people.uncw.edu/smithms

UNITED STATES (FLORIDA KEYS)

Florida Bay Fish-Habitat Assessment Program.

Michael Durako, Biology and Marine Biology http://people.uncw.edu/durakom

Effects of ocean currents on reef fish population dynamics. Behavioral interactions of reef fish.

Will White, Biology and Marine Biology http://people.uncw.edu/whitejw

The role of water flow in structuring reef communities and how it affects coral bleaching and reef suspension feeders such as sponges, corals and fishes.

Christopher Finelli, Biology and Marine Biology http://people.uncw.edu/finellic

Functions of unusual organic compounds derived from Caribbean coral reef sponges and sea whips. Ecology of sponges on coral reefs.

Joseph Pawlik, Biology and Marine Biology Center for Marine Science http://people.uncw.edu/pawlikj Management strategies adopted by NOAA and the Florida Keys National Marine Sanctuary trying to control populations of lionfish, an invasive species, through programs that encourage CATCH and EAT!

Jerome Naar, Center for Marine Science http://people.uncw.edu/naarj



The Aquarius Reef Base mission is to serve as a national asset for conducting marine

ecosystem science, long-term ecological studies, coral observatory and sentinel site science, undersea technology development, extreme environment training and outreach and education. The *Aquarius* undersea laboratory, located 4.5 km offshore Key Largo, Florida in 20 m of water, has been operated by UNCW for the National Oceanic and Atmospheric Administration since 1990 and is the main component of the Reef Base.

Thomas A. Potts, Aquarius http://aquarius.uncw.edu



Applications of undersea technologies to scientific research.

Cooperative Institute for Ocean Exploration Research and Technology http://www.cioert.org

■ VENEZUELA

† 4 Soaring with Fidel. Following migratory ospreys in the Caribbean.

David Gessner, Creative Writing www.uncw.edu/writers/faculty_gessner.html





Facilities



Underwater ocean laboratory Key Largo, Fla. http://aquarius.uncw.edu



Cooperative Institute for Ocean Exploration, Research and Technology www.cioert.org



The role of water flow in structuring reef communities and how it affects coral bleaching and reef suspension feeders such as sponges, corals and fishes.

Christopher Finelli, Biology and Marine Biology http://people.uncw.edu/finellic



Functions of unusual organic compounds derived from Caribbean coral reef sponges and sea whips. Ecology of sponges on coral reefs.

Joseph Pawlik, Biology and Marine Biology, Center for Marine Science http://people.uncw.edu/pawlikj



Doug Gamble, Geography and Geology http://people.uncw.edu/gambled



₹ ★ Examination of energy flow and relationships to animals to deep coral banks, canyon systems and rocky areas.

Steve Ross, Center for Marine Science http://www.uncw.edu/cms/bio.rosss.htm



↑ ↑ Pre-colonization to modern era Caribbean history with a specific focus on the Age of Sail.

William McCarthy, History http://people.uncw.edu/mccarthyw



✓

✓ Phylogenetics, biogeography and floristics of western Atlantic and Caribbean marine algae.

D. Wilson Freshwater, Center for Marine Science http://www.uncw.edu/cms



Speciation and population genetic connectivity of *Hypoplectrus* coral reef fishes.

Michael McCartney, Biology and Marine Biology, Center for Marine Science http://people.uncw.edu/mccartneym



ROV Operations of remotely and autonomously operated vehicles. Region-wide support including multibeam bathymetry, fisheries, geo-referenced habitat documentation, instrument recovery and specialized instrument deployment.

Lance Horn, Center for Marine Science http://www.uncw.edu/cms



Management strategies adopted by NOAA and the Florida Keys National Marine Sanctuary trying to control populations of lionfish, an invasive species, through programs that encourage CATCH and EAT!

Dr. Jerome Naar, Center for Marine Science http://people.uncw.edu/naarj



• Archaeology field school provides students with hands-on experience excavating and cataloging artifacts from indigenous Caribbean peoples.

Scott Simmons, Department of Anthropology http://people.uncw.edu/simmonss/

UNCW Caribbean Research Supported by:

